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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/761,303	01/17/2001	Stephen L. Biracree	1043.001	3844

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MENDELSON AND ASSOCIATES PC
1515 MARKET STREET
SUITE 715
PHILADELPHIA, PA 19102

EXAMINER

BURD, KEVIN MICHAEL

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 03/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/761,303

Applicant(s)

BIRACREE ET AL.

Examiner

Kevin M. Burd

Art Unit

2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 11, 13, 15-19, 23 and 25-39 is/are rejected.
- 7) ☒ Claim(s) 2-10, 12, 20-22, 24 and 40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

1. This office action, in response to the remarks filed after final on 3/4/2005, is a non-final office action.

Response to Arguments

2. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.
3. Applicant's arguments, see the remarks filed after final on 3/4/2005, with respect to the rejections of claims 1-40 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, new grounds of rejection is made in view of the previously cited reference Paik et al (US 5,311,546); Wei (US 5,398,078) and Setty et al (US 5,877,720).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 11, 13-16, 18, 19, 23, 25, 26, 28-36, 38 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Paik et al (US 5,311,546).

Regarding claims 1, 11, 14, 19, 23, 29-31, 34 and 39, Paik discloses a method and apparatus for timing recovery of symbols in a received signal. The receiver is

shown in figure 3. Samples of the filtered signal are taken over a time period and a phase error is determined (column 3, lines 55-57). The phase error is determined by an equalization algorithm such as the Constant Modulus Algorithm (column 6, lines 36-42). The output of this algorithm is used in updating the filter coefficients of the equalizer (column 6, lines 44-47) to minimize the phase error or reduce the phase error below a threshold (column 3, lines 55-57). This adaptive equalization will continue for subsequent received samples.

Paik does not expressly disclose generating the phase error of the sample from a received signal is based on the gradient of a blind cost criterion of Bussgang-class cost functions. However, Applicant states, on page 7, lines 28-30, the Constant Modulus (CM) criterion is an example of a blind cost criterion of Bussgang-class cost functions. In addition, on page 7, lines 14-15 of the instant application, Applicant states "the stochastic gradient descent of the CM criterion for equalization is known as the Constant Modulus Algorithm (CMA)." Therefore, if an example of a blind cost criterion of Bussgang-class cost functions is the Constant Modulus (CM) criterion and the stochastic gradient descent of the CM criterion for equalization is known as the Constant Modulus Algorithm (CMA), then the CMA is a Bussgang-class cost function. So, Paik does teach generating the phase error of the sample from a received signal is based on the gradient of a blind cost criterion of Bussgang-class cost functions.

Regarding claims 13 and 28, the received signal is a QAM signal (column 1, lines 26-35 and abstract).

Regarding claims 15, 16, 35 and 36, the digital data is a high definition television signal (column 1, lines 14-17).

Regarding claims 18, 32 and 38, the digital data is a high definition television signal (column 1, lines 14-17) and it is inherent that this digital television signal be in compliance with the standards for digital television signals such as the ATSC standard.

Regarding claims 25 and 26, the received signal is an RF signal and is converted to a digital signal (column 1, lines 26-35). The conversion from analog to digital will generate a sequence of discrete digital values.

Regarding claim 33, figure 3 shows the error signal generator generating terms to update equalizer coefficients.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 17 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paik et al (US 5,311,546) in view of Wei (US 5,398,073).

Regarding claims 17 and 37, Paik discloses the method and apparatus stated above in paragraph 4. Paik does not disclose the received signal is a vestigial sideband (VSB) modulated signal. Wei discloses a modulation scheme for HDTV using signal

points of a one-dimensional VSB constellation (abstract). This modulation scheme preserves the well understood and much to be desired advantages of using VSB for HDTV as well as having improved performance over other types of modulation (column 2, line 68 to column 2, line 4). For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the teachings of Wei into the method and apparatus of Paik.

6. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Paik et al (US 5,311,546) in view of Setty et al (US 5,877,720).

Regarding claim 37, Paik discloses the method and apparatus stated above in paragraph 4. Paik does not disclose an interpolator coupled to the A/D converter. Setty discloses coupling an interpolator to an A/D converter (abstract). This interpolating A/D converter is advantageous because it can handle different input data rates and has an output that is switchable between at least two different levels of resolution (column 3, lines 26-29). For these reasons, it would have been advantageous for one of ordinary skill in the art at the time of the invention to incorporate the interpolating A/D converter into the receiver of Paik.

Allowable Subject Matter

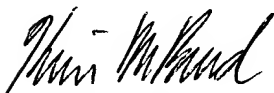
Claims 2-10, 12, 20-22, 24 and 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Thursday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kevin M. Burd
3/23/2005

**KEVIN BURD
PRIMARY EXAMINER**